

WHAT IS CLAIMED IS:

1. A light signal transmitting device for allowing signal light entering from one end of at least one optical fiber on an incident side to enter a light guide body, and emitting the signal light towards a plurality of output nodes and including a light transmitting connecting material for optically connecting the optical fiber with one end surface of the light guide body, wherein the light guide body is constituted so that particles for scattering the signal light are dispersed in an optical medium.

2. A light signal transmitting device according to claim 1, wherein a refractive index of the connecting material has a value within a range of 1.45 to 1.57.

3. A light signal transmitting device according to claim 2, wherein the connecting material is adhesive for adhering the light guide body to the optical fiber.

4. A light signal transmitting device according to claim 1, wherein the connecting material is provided at least in an area including a periphery of a gap between the optical fiber and the light guide body.

5. A light signal transmitting device according to claim 4, wherein the connecting material is provided at least in an area including a partial side surface of the optical fiber and the entire light guide body, and the gap is sealed by the

connecting material.

6. A light signal transmitting device according to claim 1, wherein an average particle diameter of the particles is not less than a wavelength of the signal light transmitted by the light guide body.

7. A light signal transmitting device according to claim 1, wherein the optical fiber is a plastic optical fiber.

8. A light signal transmitting device according to claim 1, wherein the light guide body has a rectangular shape.

9. A light signal transmitting device according to claim 1, wherein a plurality of optical fibers are provided.

10. A light signal transmitting device according to claim 1, wherein the other end of the light guide body has a reflecting unit.

11. A light signal transmitting device according to claim 10, further comprising an optical fiber connected with the other end of the light guide body.

12. A signal processing device, comprising:

a light signal transmitting device for allowing signal light entering from one end of at least one optical fiber on an incident side to enter a light guide body, and emitting the signal light towards a plurality of output nodes and including a light transmitting connecting material for optically connecting the optical fiber with one end surface of the light guide body, wherein the light guide body is constituted so that

particles for scattering the signal light are dispersed in an optical medium;

a light emitting element for emitting a light signal according to an electric signal to an end of an optical fiber or a light receiving element for converting the light signal received from the other end of the optical fiber into an electric signal; and

an electric circuit for processing the electric signal.

13. A signal processing device according to claim 12, wherein a refractive index of the connecting material has a value within a range of 1.45 to 1.57.

14. A signal processing device according to claim 13, wherein the connecting material is adhesive for adhering the light guide body to the optical fiber.

15. A signal processing device according to claim 12, wherein the connecting material is provided at least in an area including a periphery of a gap between the optical fiber and the light guide body.

16. A signal processing device according to claim 15, wherein the connecting material is provided at least in an area including a partial side surface of the optical fiber and the entire light guide body, and the gap is sealed by the connecting material.

17. A signal processing device according to claim 16, wherein an average particle diameter of the particles is not

less than a wavelength of the signal light transmitted by the light guide body.

18. A signal processing device according to claim 17, wherein the optical fiber is a plastic optical fiber.

19. A signal processing device according to claim 12, wherein the light guide body has a rectangular shape.

20. A signal processing device according to claim 19, wherein a plurality of optical fibers are provided.

21. A signal processing device according to claim 12, wherein the other end of the light guide body has a reflecting unit.

22. A signal processing device according to claim 21, further comprising an optical fiber connected with the other end of the light guide body.